



Project Summary

Review of Control Options for Methyl Bromide in Commodity Treatment

Glenn B. DeWolf and Jim L. Phillips

Methyl bromide (MeBr), a fumigant for agricultural commodities, is an ozone depleting chemical. The U.S. EPA has banned its use beginning in 2001. In some applications, a suitable substitute for MeBr has not been found, so there is discussion of an exempted use of MeBr with capture and recovery or recycle for some applications. The report describes recent developments in control of MeBr and discusses technical considerations and requirements for and economic feasibility of recovery. The primary focus of the report is on quarantine applications using MeBr. Two of the most promising approaches to recovery, recycle, and reuse continue to be physical adsorption on a solid sorbent and cryogenic condensation. In addition to discussing each of these technologies, the report identifies some of the critical considerations for process economics and remaining information gaps. The overall conclusion of this review is that recovery, recycle, and reuse appear to be feasible, have not been unequivocally proven to be so, and there is little current incentive to pursue such technologies unless there is hope of exemptions to or a rescission of the MeBr ban.

This Project Summary was developed by EPA's National Risk Management Research Laboratory, Research Triangle Park, NC, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Overview

Methyl bromide (MeBr), a significant fumigant for agricultural commodities, is listed by the Montreal Protocol as an ozone depleting chemical. The U.S. EPA has banned its use beginning in 2001. In some applications, a suitable substitute for MeBr has not been found, so there is discussion of an exempted use of MeBr with capture and recovery or recycle for some applications. In 1994, a brief study was undertaken to characterize fumigation processes for one important type of commodity fumigation, space fumigation, and to identify potential methods for control, recovery, and recycle of MeBr. EPA issued a report in 1994. Since that time, there have been additional developments in finding appropriate technologies for this purpose. Continuing interest in the subject has been reflected in two prominent forums for disseminating information related to MeBr. The first was a conference held in Orlando, Florida, in November 1994. The second was a report issued by the United Nations Methyl Bromide Technical Options Committee in 1995. Also an important development was the installation and testing of a MeBr treatment and reuse system at the Port of San Diego in 1995. Because of these advances, and additional study, this report was prepared to communicate information on these developments and to discuss further technical considerations and requirements for technical and economic feasibility of recovery. The primary focus of this report is on MeBr treatment in quarantine applications.

At this time, two of the most promising approaches to recovery, recycle, and reuse continue to be physical adsorption on a solid sorbent and cryogenic condensation.

A new adsorption system was installed and tested at the Port of San Diego. Based on zeolite adsorption technology, the system achieved over 95% removal efficiency of MeBr from the post-fumigation vent stream. This is consistent with expecta-

tions based on other tests that have been reported. In addition to zeolite adsorption, condensation at cryogenic temperatures still appears to be a potentially feasible candidate for some applications. However, like activated carbon, another candidate technology, little if any new activity in these areas appears to have occurred recently. In addition to discussions on each of these technologies and their costs, this report

identifies some of the critical considerations for process economics and identifies remaining information gaps and further needs. The overall conclusion of this review is that recovery, recycle, and reuse appear to be feasible, have not been unequivocally proven to be so, and there is little current incentive to pursue such technologies unless there is hope of exemptions to or a rescission of the MeBr ban.

Glenn B. DeWolf and Jim L. Phillips are with Radian Corp., Austin TX 78720-1088.

Robert V. Hendriks is the EPA Project Officer (see below).

The complete report, entitled "Review of Control Options for Methyl Bromide in Commodity Treatment," (Order No. PB96-167556 Cost: \$21.50, subject to change) will be available only from

National Technical Information Service

5285 Port Royal Road

Springfield, VA 22161

Telephone: 703-487-4650

The EPA Project Officer can be contacted at

National Risk Management Research Laboratory

U.S. Environmental Protection Agency

Research Triangle Park, NC 27711

United States
Environmental Protection Agency
National Risk Management
Research Laboratory (G-72)
Cincinnati, OH 45268

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